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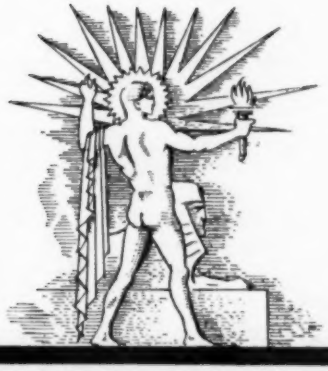
SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE •



August 29, 1942

Thunderbolts

See Page 132

A SCIENCE SERVICE PUBLICATION

Do You Know?

The North American *waterfowl population* last January was about 100,000,000, according to the U. S. Fish and Wildlife Service.

An *octopus* which is "setting" on its eggs will almost completely cover itself with small shells, held up by means of the suction disks on its eight arms.

Eight hundred sixty million board feet of *lumber* will go into the packaging of war materials during 1942 according to a U. S. Department of Commerce estimate.

A fully-equipped *traveling laboratory* is being manned by U. S. Department of Agriculture technicians serving as "trouble shooters" for the dried egg industry.

Asparagus plants may be male or female; male plants are heavier and yield more spears, while spears from female plants are larger individually and of better quality.

Sulfanilamide has been used to treat pneumonia in fowls, but sometimes, in spite of proper diet, hens began to lay soft-shelled eggs, and never recovered the ability to lay hard-shelled ones.

Two new strains cultivated from the *wild western dewberry,* or trailing blackberry, have as good a flavor as the wild berry and in addition are perfect-flowered, productive, bear fruit of large size, and are more resistant to leaf and cane spot.

Question Box

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ZOOLOGY

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Most articles which appear in SCIENCE NEWS LETTER *are based on communications to Science Service, or on papers before meetings. Where published sources are used they are referred to in the article.*

The *shrew,* tiny animal half the size of a house mouse, eats its weight in food every day.

A substitute for glycerin, vital lend-lease chemical, is *sodium lactate,* now being used in food and pharmaceutical processes.

Many astronomers believe that the *moon craters* are of volcanic origin, but much is in favor of the theory that they were caused by the impact of meteorites or planetesimals.

The *puff adder,* a short, heavy-bodied African snake, can almost double the diameter of its body by drawing in air.

Hydrogenated cotton seed oil flakes, when used to fortify *butter,* will raise its melting point, so that it resists melting at high temperatures.

To supply military demands for *rope,* the U. S. Department of Agriculture has bought and distributed 3,000 bushels of hemp seed to plant 350,000 acres; mostly in Kentucky.

SCIENCE NEWS LETTER

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POPULATION

Birth Rate Will Drop

Present peak in marriages and births will decrease to new low soon, census expert predicts. "Curtailed baby crop" and surplus women expected again as result of war.

➤ MARRIAGE and birth rates, pushed to an all-time high by the war boom and the Selective Service Act, will hit a new low as soon as our full participation in this war is felt, Dr. Philip M. Hauser, assistant director of the U. S. Census, predicted to the Society for Social Research meeting at the University of Chicago.

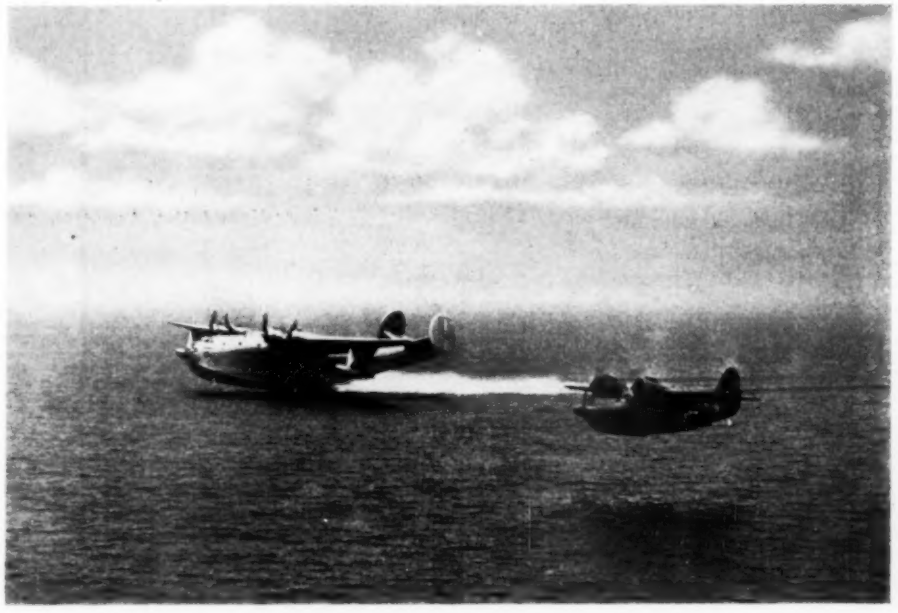
With the death rate practically constant, last year's jump in the birth rate has brought U. S. population up to an estimated 133,039,000. Internal migration is increasing, with 1941 migration from farms to cities doubling that of 1940. This is expected to continue until the peak in war production is reached, including larger and larger percentages of women and Negroes, as the labor shortage grows.

However, in the long run, the war will greatly decrease the rate of population growth, predicts Dr. Hauser. Since American economy has been built on anticipation of population increase, this may have serious economic consequences.

Unless we succeed in successfully converting war production to consumer production, other post-war results will be depression and chronic migration of destitute workers, perpetuating the Dust-Bowl era on a larger scale.

In any case we may expect a surplus of women following the war, says Dr. Hauser, which will create a class of women doomed to spinsterhood.

Another dislocation in world population comes from the fact that this war is being fought by the "curtailed baby crop" of World War I. These "hollow classes" in the age pyramid of the nation will reappear in each generation, requiring many generations to erase.



MARS, the Glenn L. Martin Company's 70-ton flying boat, is a possible answer to ship losses due to enemy submarines. Biggest flying boat in the world and herald of others twice and more her size, the Mars should be able to replace surface ships, it is claimed, because of high speed and greater frequency of trips. The giant size is indicated by contrast with the Grumman amphibian shown flying beside her. Flight deck and a large portion of the main deck are supercharged, permitting normal breathing without oxygen masks miles above the clouds.

However, post-war planners should study the effects of population as a cause of war, even more than the post-war effects on population, said Dr. Hauser. He hopes the settlement of World War II will recognize the danger of faulty distribution between population and natural resources, as the Treaty of Versailles did not.

Science News Letter, August 29, 1942

RESOURCES

Boom in Shark Fishing; Source of Vitamins

➤ SHARK-FISHING off the South Florida East Coast has been catapulted from a more or less despised calling to a vital defense industry. The reason is the urgent demand for shark liver oil, which is particularly rich in vitamins A and D. Shark liver oil is largely replacing Norwegian cod liver oil, now impossible to import.

Salerno, on Manatee Creek, up St. Lucie River, is the the center of the revived and now flourishing shark industry. The sharks are caught on mile-long chain trot lines, baited with chunks of coarse fish every 25 feet, set on the edge of the Gulf Stream bottom and left overnight. The ends of the line are anchored and marked with buoys. Hauled to the surface the next morning by winches, the sharks are clubbed, brought to port and flayed. The livers are boiled for the oil, which is barrelled and shipped to northern extracting plants. A shark's liver produces anywhere from two to 25 gallons of oil.

Varieties of the savage, cold-eyed scavengers of the sea, plentiful five miles off St. Lucie Inlet, include the nurse shark, hammerhead, tiger shark, leopard shark, lemon shark, mackerel shark and the great white shark. Sharks weighing up to and over 1,500 pounds, have been caught by the Salerno commercial fishermen. The average length is seven feet. The big fellows are the ones that got away, breaking the stout chain lines that held the three-quarter-ton "babies."

Sharks are processed as thoroughly as any pig in the Chicago stockyards. The skin is pickled in brine and goes to Newark, N. J., to be made into novelties and into a scuff-proof leather for the toe-caps of heavy working and hunting shoes. The fins find their way to the country's many Chinatowns for soup, and fetch a high-price since the so-called delicacy can no longer be imported from Shanghai and Hong Kong; the flesh is chopped up for dog and

poultry food and fertilizer; the jaws and teeth are sold for souvenirs; the backbones are made into walking sticks; and the eyes are dried, crystallized and polished as jewels for the novelty trade —now largely confined to men in khaki stationed in Florida.

Shark fishing is not without its dangers. Men have been caught on empty hooks, dragged overboard and drowned. Sudden tropical storms have sunk more than one shark boat. And now that German U-boats have commenced to machine-gun fishing boats the men of Salerno have another hazard to face.

But new boats nevertheless are being outfitted to go after the sharks. Shark liver oil is now as valuable and as sorely needed as rubber or tin. Florida's shark fishermen are right up on the firing line.

Science News Letter, August 29, 1942

AERONAUTICS

P-47 Now in Production Fast and Hard Hitting

See Front Cover

➤ THE "THUNDERBOLT," Republic's P-47, will out-fly and out-fight any fighter plane that any country now has in the sky, according to a report released by Lt. Gen. Henry H. Arnold, Chief of U. S. Army Air Corps.

Climbing fast, it achieves best flying speed as high as 25,000 feet. Military authorities put the P-47 in the 400-mile per hour class.

It weighs 11,000 pounds, compared to the ordinary weight of 6,000 pounds for a fighter plane. This extra weight is due to heavy armor, super-charger, equipment for high altitude flying, and armament.

The full firing power of the "Thunderbolt's" guns is said to be equal to a five-ton truck hitting a brick wall at 60 miles per hour.

Science News Letter, August 29, 1942

GENERAL SCIENCE

Vice President Wallace Given Honorary Membership

➤ VICE-PRESIDENT Henry A. Wallace has been elected to honorary membership in the National Association of Science Writers. The action was taken in recognition of the Vice-President's interest in the popularization of science and his research contributions in the field of genetics.

Science News Letter, August 29, 1942

MEDICINE

Tetryl Causes Illness

Blame chemical relative of TNT for cases of illness in thousands of war workers. Preventive measures and therapy devised. Tolerance develops after several weeks.

➤ TETRYL, chemical relative of TNT, is producing thousands of cases of poisoning in war plants, it is reported (*Journal, American Medical Association,* Aug. 22).

As production of explosives for the armed forces goes into high gear, an increasing number of poisoning cases are expected—odd cases of sickness with which the medical profession has been unfamiliar in peacetime practice.

Symptoms ordinarily occur after the second or third week of exposure. They usually consist of loss of appetite and nausea, coughing or sneezing, nosebleed, and—most significant of all—a characteristic inflammation of the skin. Anemia is also present in a good many cases.

Yellow coloration of the skin of these war workers is not a symptom but merely a stain.

Observations made on 1,258 cases by Dr. Leon J. Witkowski, Dr. C. N. Fischer and Howard D. Murdock, of Chicago, emphasize that the reactions are not only local, but affect the system as well. Of the war plants investigated where tetryl is processed, about 23% of the workers were affected.

Although many workers were found to eventually develop a tolerance to the explosive after a number of weeks, the illness is not to be neglected. Physicians have already devised measures for the war workers to protect health and avoid lost time in the war effort.

The physicians making the report emphasize the necessity to control the tetryl dust found in the plant atmosphere. This may be aided by conducting certain operations in small closed rooms separated from the rest of the plant.

Cleanliness, ventilation, and temperature below 72 degrees Fahrenheit, are also important.

Dietary measures, which have been recommended by some, consisting of taking milk or vitamin C, do not appear to be of great value to date, according to the results of the current study.

Lotions and ointments have been successfully used by physicians to allay the skin inflammation and the anemia is controlled by standard methods of treatment.

Use of great quantities of tetryl in certain defense areas has introduced a new occupational hazard—a challenge that can be met by cooperation between workers, when symptoms are first noticed, and industrial medicine.

Science News Letter, August 29, 1942

NAVIGATION

Charts Have New Colors

➤ NAVIGATION CHARTS of the U. S. Navy will now appear in new colors that show up in both daylight and under the red lights recently found best for war-darkened ships (*Hydrographic Bulletin,* Aug. 12).

Studies conducted by the Navy show, the Bulletin indicates, that the man who steps from a dark deck to a chart room illuminated by white or blue light, will require from ten minutes to half an hour after he returns to the darkness before his eyes again become dark-adapted. This time required before he is able to see well in the dark is reduced to only a few seconds if the light used is red instead of blue.

But when red lights and red goggles were introduced as a result of this study, it was found that the old colors on the navigation charts could no longer be distinguished. The buff color used for land, the orange which indicated navigational lights, and the red lines are all invisible under red lighting.

So in future charts, the land areas will be gray, the lights will be magenta, and purple will be substituted for red.

Care should be used in reading the old charts under red light, the Hydrographic Office warns, until the new charts are available.

Science News Letter, August 29, 1942

PHARMACY

Report Pharmacy Advance

Domestic sources of ergot investigated to relieve war shortage. Certain astringents enhance the effect of germicide. Hypodermic unit developed for war use.

➤ MEDICAL AID to war-time America may result from research work reported at the meeting of the American Pharmaceutical Association held in Denver.

A report from Oregon revealed that ergot, the valuable drug used in childbirth and to prevent hemorrhage following delivery, was collected there and found to have two to four times the potency of the official standard.

Discussion among pharmacists indicated that research is going on in several sections of the country on ergot, which is a rye smut. Imports from Spain and Russia are practically nonexistent and an acute shortage has been developing. One shipload that did make the hazardous journey was reported to be below the standard for these medicines in America.

U. S. Plant Industry Office, National Research Council, and the Committee on Botany and Pharmacognosy have, therefore, all requested investigation of domestic sources.

In the vitamin field, the application of a color method to find the amount of vitamin B_1 (thiamin) in pharmaceutical preparations was reported by Ernst R. Kirch of Chicago, and Olaf Bergeim. The vitamin is reacted with a dye-like chemical and the color extracted with an alcohol. By determining the intensity of the color produced, the pharmaceutical chemist can calculate the amount of vitamin present.

Astringents, chemical subtsances such as are used in so-called "skin tighteners", may enhance the effect of germicides and disinfectants, another paper reported.

Much used but long in ill repute as antiseptics, the astringents now take their place as an adjunct to other antiseptics. The double action of the two is often desired by physicians but the boost given to germ-killing power of antiseptics by the astringents had not been fully realized.

Research evidence presented by Joseph B. Sprowls and Charles F. Poe of Boulder, Colo., indicates that such chemicals as tannic acid, widely used for burns, has a beneficial effect on the action of several common antiseptics.

Development of a single-dose emergency hypodermic unit at the request of the War Department was also reported to the pharmacists by J. D. Hulsmann and F. W. Nitardy of Brooklyn. It is a sterile, airtight, leak- and shock-proof, convenient unit, said to be ideal for use on the field of battle.

Possible use of some of the aminophthalic chemicals as local anesthetics was suggested in a paper by L. W. Rowe of Detroit.

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GENERAL SCIENCE

Prisoners Send Models to First Fighter Command

➤ PRISONERS in their "free-time" are building airplane models for the First Fighter Command of the U. S. Army, making the men feel that they too can aid America's war effort.

An inmate instructor in industrial arts at one prison has obtained from the Science Clubs of America complete instructions for the building of these models and their production is under way.

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INVENTION

New Type Tailless Plane Developed; Wing Tips Move

➤ A TAILLESS airplane of a new type is covered by patent no. 2,293,644, issued to M. E. Gluhareff of Stratford, Conn., and assigned by him to the United Aircraft Corporation.

Mr. Gluhareff's plane has a single pusher propeller on the plane's almost non-existent tail, with stabilizing and elevating flaps on the inner trailing edges of the wings. Farther out are the ailerons.

Two novel features are incorporated, in two different designs. One pulls the entire wings forward, changing their angle with the fuselage, to aid in maneuvering. The other has rigid wings, but hinged wing-tips somewhat like the wing-tips of a gull.

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***SYNTHETIC RUBBER BAGS** that can convert ordinary steel boxcars into gasoline carriers, were recently given their first demonstration in Washington, D. C. Here one of them is being examined by J. B. Eastman, Director of Defense Transportation (left) and Reid Gray, inventor of the device.*

PSYCHIATRY

War Neurosis Effects

Even normal men may break under severe pressure. Psychiatrists can cure soldiers in early stages of mental collapse. Weary soldiers fall into trance.

➤ IN THIS war even the healthy, normal fighting man may break down under severe enough pressure.

But war neurosis, while not confined to the neurotically predisposed individual, is easily cured in its early stages. This statement, based on actual observation of war casualties, was made by Commander Uno H. Helgesson, U. S. Navy psychiatrist.

"We are all convinced of the importance of sulfa drugs for infections," he said. "Let's not forget that prompt psychiatric treatment for emotional breakdowns is equally vital."

Commander Helgesson pleads for an avoidance of the mistake made in the last war.

"Tens of thousands of soldiers could have been saved by a few hours' treatment," he said. "But war neuroses were neglected in the last war until it was too late. They became chronic cases."

The gruesome refinements of modern warfare which have produced Dunkirks, Pearl Harbors and Bataans, can push human endurance to the breaking point. Commander Helgesson told of many fighting men who had shown incredible courage for days on end, suddenly collapsing after their job is done.

Two or three days after the actual danger is past, they often fall into a stupor, with no memory of their recent experience. Even a previously healthy soldier, if pushed too far, may suddenly go into a catatonic-like trance that would ordinarily be diagnosed as schizophrenia.

"Unless this soldier can be made to remember his frightful experience and to re-live it, he is in imminent danger of developing permanent symptoms." Commander Helgesson recommends hypnosis or one of the hypnotic drugs, such as sodium amytal, to induce memory.

"But this is only the beginning of treatment," he warned. "Cure depends on the skill of the psychiatrist in guiding and controlling the acting-out process, once the patient begins to talk.

"Under no circumstances should shock treatment of the insulin, metrazol or electric variety, be used in these cases," he said. "The patient is already suffering from shock, and can't take any more."

In comparing this war and the last, Commander Helgesson spoke of stupor states, associated with profound amnesia, as a characteristic type of emotional breakdown in the present conflict. He believes the hysterical, or conversion symptom so prevalent last time, is less effective now as a defense mechanism. There is no longer any rear, to which the soldier can be sent when he gets sick. With hospitals in constant danger of air bombardment, there is no safety anywhere. During the last war the instinctive, unconscious drive of the human organism to protect itself was often expressed by getting sick, and being sent behind the lines. From a Dunkirk or a Pearl Harbor there is no escape except by death, or perhaps by a state closely resembling death in which overwhelming danger and horror can be forgotten.

Science News Letter, August 29, 1942

MEDICINE

Vitamin D Forms Vary

➤ ADDITIONAL EVIDENCE that forms of vitamin D—viosterol and cod liver oil—vary widely in their ability to prevent tooth decay, is reported by Dr. E. C. McBeath and Dr. W. A. Verlin of New York in the *Journal of the American Dental Association* (Aug. 1).

Nearly twice as many vitamin D units of irradiated ergosterol or viosterol were required as of cod liver oil, to produce the same preventive effect. When the dose of viosterol was quadrupled, there was only a slight improvement in results.

Effectiveness of vitamin D, and especially cod liver oil, in preventing tooth decay was reaffirmed by the fact that a daily dose of 400 units, a little more than a teaspoonful of standard cod liver oil, reduced dental caries by nearly a half.

When this dosage of cod liver oil was doubled, the decay was lowered by about two-thirds as compared with a group of children receiving no vitamin D supplement to their diets.

Some research workers claim that concentrated vitamin D is less effective than when given in a more dilute form. Drs. McBeath and Verlin, therefore, gave all dosages dispersed in a glass of chocolate milk.

Other research also indicates that the two forms of vitamin D, cod liver oil and viosterol, are really chemically different and can have different physiological effects.

"In our own studies," the research workers report, "which now comprise 120 children given supplements of irradiated ergosterol (viosterol), the effect, while always measurable, was uniformly unfavorable when compared with those from cod-liver oil therapy."

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ZOOLOGY

Zoo Gets Three Ancient African Fish Via Harvard

➤ THREE representatives of a very old family have arrived in Washington from Harvard. No, they aren't Mayflower descendants, called to give the government the benefit of their brains. In fact, although their mission is primarily educational, they have very little brains; and they came originally from Africa, anyway.

They are three fish, of an exceedingly ancient species, representing one of the oldest lines of living vertebrates. They are long and slim, like eels, but they are not at all closely related to eels, being nearer kin of our southern gars, which are among the most primitive of American fish. They are so seldom seen that they have no common name; zoologists call them *Calamachthys calabaricus*.

Their Odyssey, which has just wound up at the National Zoological Park in Washington, began at Lagos, in southern Nigeria, tropical Africa. A lot of them, captured there, were taken to the London Zoo. From London a number of specimens were sent to Dr. Thomas Barbour, of the Harvard Museum of Comparative Zoology.

After keeping them on the Harvard campus for five years, Dr. Barbour sent three specimens to his friend Dr. William M. Mann, director of the National Zoological Park. They are between eight and twelve inches long, and are estimated to be seven or eight years old.

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ZOOLOGY

London Ape Makes Sketch

Simian artists in England and India give hints of possible origin of human art. Companions show interest in outline drawings made with twig or finger-tip.

➤ WERE THERE artists before there were human beings? News that apes and monkeys do things that might be interpreted as the beginnings of drawing is brought by the British journal, *Nature* (June 6).

A solitary simian practitioner of "art for art's sake" was observed in the London Zoo by its director, Dr. Julian S. Huxley. He was watching a young gorilla in a cage illuminated with a strong electric light, that cast the animal's shadow on a white wall.

"Seeing his shadow before him at one moment, he stopped, looked at it, and proceeded to trace its outline with its forefinger."

Another scientist, with Dr. Huxley at the moment, agreed that the action was deliberate. The young ape repeated his finger-tip "sketch" twice more, then went on with his play. He was never seen to do it again, though he was often watched.

Dr. Huxley's communication came to the attention of J. Leonard Bowen of Port Sunlight, Cheshire, England, who reported a similar observation which he made while in India some years ago. Only in this instance the animals were long-tailed wild monkeys playing in the open. And they functioned as artists with an audience—perhaps the first art critics.

"Large numbers of large long-tailed monkeys romp about the little hill station of Matheran, near Bombay, and afford much amusement to visitors," reports Mr. Bowen. "I frequently saw such monkeys trace the outline of one of their hands in the dust, using a twig held almost as one would hold a pencil. Other monkeys inspected the traced outlines with a show of interest, walking round and round the spot with what seemed to be an anxious manner."

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***MOBILE SUBSTATIONS** for emergency electric service in war and peace or for temporary use, are now produced by General Electric. Installation is merely a matter of parking, grounding the unit, elevating the switch structure, and making the necessary wire connections. In event of bomb damage the substation is towed quickly from place to place. The unit pictured can step down 33,000 volts to 4,330 volts.*

ELECTRICAL ENGINEERING

Build Powerful Electron Whirler and X-Ray Machine

➤ A MASSIVE CONCRETE building with walls three feet thick has been constructed in Schenectady to house what will be by far the world's most powerful X-ray machine, now being built by the General Electric Company. The building was inspected by the National Inventors Council, under guidance of Dr. William D. Coolidge, Director of Research and a member of the Council.

The new machine will whirl electrons up to an energy of 100,000,000 volts, and produce X-rays of like power. It is similar to the 20,000,000-volt machine built by GE last year with the assistance of Dr. Donald W. Kerst of the University of Illinois, its original inventor.

A special use of the machine, which may be completed before the end of this year, will be to determine the maximum thickness of armor plate to which X-rays can be usefully applied. Eight inches is the limit of the present 1,000,000-volt outfits, but the much thicker plates used on battleships require examination. The new machine, which will give voltages from 1,000,000 to 100,000,000, will accomplish this.

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MEDICINE

U. S. Lacks Women Doctors; Blamed On Prejudice

➤ NOW THAT women doctors are so desperately needed to free men for military service and to take over civilian medical requirements, the nation finds itself with only a handful of women physicians and surgeons, says Dr. R. R. Spencer, of the National Institute of Health (*War Medicine*, July).

While the policy of discouraging women from entering medical schools has been "short-sighted and ungenerous, this is no time for postmortems," says Dr. Spencer. He urges that college women with special aptitudes in the biologic sciences be encouraged to study medicine.

After the war women will be filling key medical posts now held by men, as consultants in industrial hygiene, directors of public health services, surgeons and research directors, predicts Dr. Spencer.

Science News Letter, August 29, 1942

MILITARY SCIENCE

Gliders Get Wider Use; Carry Supplies to Troops

➤ GLIDERS and small liaison planes capable of landing on little emergency fields or even on highways, lend themselves to probable use, in addition to transport planes, by the new Air Evacuation Group (Medical). This unit operates under Brig. Gen. David N. W. Grant, the Air Surgeon, to speed the trip of wounded troops out of the fighting area (*American Aviation*, Aug. 1).

An average transport, with two gliders, it is pointed out, could carry in tons of vital supplies to fighting forces and take out scores of wounded on each trip. Each evacuation will be under the direction of a flight surgeon, trained in the selection of cases and conversant with the effects of air travel. Each of the larger planes will also carry an Army nurse and one trained Medical Corps enlisted man.

Facilities to train the enlisted personnel for this special work will soon be set up.

Science News Letter, August 29, 1942

INVENTION

Roll and Twist Will Make Artillery Shell Stronger

➤ A NEW method for making artillery shells stronger and better able to withstand the terrific basal push they receive as they are fired, is covered by patent 2,292,928, obtained by William C. Coryell of Youngstown, Ohio. Mr. Coryell starts with a forged blank of a deeply bell-shaped pattern. He rolls the flaring skirt down to the caliber already given to the head, at the same time twisting it. This, he states, adds greatly to the strength of the metal near the base.

Science News Letter, August 29, 1942

INVENTION

Stylus Writes on Diamond By Using Gem Dust "Ink"

➤ FIANCES of the future may have their betrothal vows of eternal devotion marked not in the metal of the engagement ring, but engraved on the diamond itself, in almost invisible but completely indelible lines.

This is fancy; the more matter-of-fact purpose of the invention patented (no. 2,293,100) by Joseph Baumgold, veteran New York diamond cutter, is to enable members of his craft to put their brands or hallmarks on the stones they prepare for market. This will serve the purchaser as a guarantee of quality, and will also aid in the recovery of stolen or lost gems.

The apparatus looks a bit like a small drill-press—with attachments. The place of the drill is taken by a very fine-pointed stylus, which writes on the gem surface with an "ink" of diamond dust. It is moved in the desired pattern by a "minifying" lever arrangement, which translates a large pattern on a template or pantograph into the almost microscopic one that appears on the stone.

Science News Letter, August 29, 1942

MEDICINE

Durable X-Ray Machines Assured Army Surgeons

➤ X-RAY MACHINES that will stand up to hours on end of hard use under the severe conditions of military service and be perfectly safe, are assured by rigorous tests carried out by the National Bureau of Standards.

The requirements are so severe, Bureau officials said, that most machines fail to make the grade the first time they are tested. Then they must be remodeled and often the new model fails also. Sometimes models have been sent back half-a-dozen times before a machine was produced that could meet the strenuous military requirements.

These machines are used to test the physical fitness of inductees, to examine injuries at army hospitals, to test materials in shipyards, airplane factories and other plants producing war materials.

Science News Letter, August 29, 1942

NUTRITION

Chicks May Get Soy Beans As Dried Milk Goes to War

➤ MILK-FED chickens may yield place, on premium market and restaurant listings, to soybean-fed chickens, at least for the duration. Soybean oilmeal is recommended as a substitute for dried milk in poultry rations, as increasing quantities of the latter food are sent overseas in Army supplies and lend-lease exports.

The recommendation is made in a committee report of the National Research Council. In addition to replacing the milk proteins, soybean oilmeal is also a good source of riboflavin, one of the necessary vitamin materials ordinarily supplied in milk, the report states.

Science News Letter, August 29, 1942

IN SCIEN

RESOURCES

Pao Santo May Replace Cork; Grows in Brazil

➤ BRAZILIAN BARK may substitute for cork. In a worldwide search, Pao Santo, bark of the tree *Angica Reyada*, of which there are millions in Brazil, was judged to be the material most closely resembling cork from Portugal, Spain and North Africa.

This bark has all the characteristics of cork but in lesser degree. It has been used for the past 20 years in Brazil for many of the purposes for which cork is used.

The United States uses 120,000 tons of cork annually, and while supplies are not particularly low as yet and several substitutes are already in use for bottle closures, gaskets, life preservers, and other uses, the Brazilian bark may yet be needed.

Science News Letter, August 29, 1942

BOTANY

Plant Currents Parallel Changes in Growth Rate

➤ ELECTRICITY AND LIFE processes were given a new hookup by researches of Prof. Harold S. Burr, Yale University anatomist, who simultaneously took motion pictures and electrical records from growing corn plants. (*Yale Journal of Biology and Medicine*, August).

It had been known for some time that all living things give off minute electrical currents, but Prof. Burr's experiments have shown for the first time that these variations in intensity correspond exactly with changes in the rate of growth, and with internal structural developments.

Voltages as measured by Prof. Burr were low — from 25 to 75 thousandths of a volt. Some of the changes detected by the delicate instrumental setup were quite abrupt. The more rapid fluctuations in plants, accompanying internal changes, are stated to be "curiously like brain waves in animals."

Science News Letter, August 29, 1942

NCE FIELDS

MEDICINE

More Spotted Fever Now Outside Rocky Mountains

➤ ROCKY MOUNTAIN spotted fever now occurs in other parts of the country more frequently than in the Rocky Mountain states from which it got its name. Reports of cases of this disease as they occur in the various states are now being telegraphed weekly to the U. S. Public Health Service in Washington. These reports show only about one-fifth as many cases in the Rocky Mountain states as in the rest of the nation.

The germ of the disease is carried by ticks, which makes it a warm weather disease, appearing when the ticks come out of their winter quarters. Within three to five days of being bitten by an infected tick, the patient notices the first symptoms of this often fatal disease: fever, a peculiar rash on the skin and considerable prostration.

A vaccine to protect against the disease has been developed by scientists of the U. S. Public Health Service. It is now being made by the federal health service and by a commercial firm.

A promising serum for treatment of the disease was also available this summer for the first time.

Science News Letter, August 29, 1942

INVENTION

Shafts Transmit Power to Propellers From Fuselage

➤ PROBLEM of transmitting power from a centrally mounted engine in an airplane's fuselage to twin propellers on the wings is tackled in a new way, in an invention on which U. S. patent no. 2,293,279 has just been issued to Roland Chilton of Ridgewood, N. J., and William M. Siesel of Verona, N. J.

Instead of having one lateral shaft extending from the engine through each wing, necessitating considerable weight to achieve necessary rigidity, this invention uses two slenderer shafts, with relatively small pinion gears at either end. These operate at relatively high speeds, but are "geared down" again at the propeller end of the system. Placed on opposite sides of the larger gears of both engine and propeller, they grip them firmly between them, reducing the weight of metal necessary to hold them true.

The advantages of wing propellers geared to a centrally mounted engine are obvious. The nacelles can be far smaller and shorter, thereby greatly reducing both head resistance and parasitic drag.

Rights in the patent are assigned to the Wright Aeronautical Corporation.

Science News Letter, August 29, 1942

INVENTION

Back Plate on Machine Gun Increases Its Steadiness

➤ A BACK PLATE for machine guns, claimed by its inventors to make for greatly increased steadiness in firing these chattering, jumping weapons, is the device put forth by W. G. McNeill and I. G. Boehm of Dayton, Ohio. They grant rights in their patent, no. 2,293,069, to the U. S. Government for manufacture and use without payment of royalties.

An essential part of the new invention is a set of recoil-absorbing springs, which take up much of the jolt and jar of the firing, which have in other types of mounts been imposed on the hands and arms of the gunner. The new design is especially well adapted, the inventors state, for heavy weapons like the .50-caliber machine guns.

Science News Letter, August 29, 1942

INVENTION

Meter Gives Relative Humidity Reading on Dial

➤ A METER that gives the relative humidity as a pointer-reading on a dial, like an aneroid barometer or a bimetallic thermometer, is the device offered by Frank Kahn of Philadelphia for patent no. 2,293,064.

The heart of the instrument is a thermocouple surrounded by a wet wick. The amount of current flowing through the thermocouple is affected by its temperature, which of course is affected in turn by the rate of evaporation from the wick. And the rate of evaporation depends in part on the amount of water vapor already in the air—that is, the relative humidity.

The device is intended primarily for use in connection with air-conditioning systems.

Science News Letter, August 29, 1942

ASTRONOMY

Moon Found More Massive Than Previously Supposed

➤ THE MASS of the moon is now found to be 1/81.271 of the earth's mass, instead of 1/81.56 as previously supposed. The probable error is plus or minus 0.021. The latest figure was calculated by Dr. H. Spencer Jones, Astronomer Royal of England.

It is a by-product of his discovery last year that the mean distance of the sun from the earth is 93,003,000 miles instead of the previously accepted value of 92,870,000 miles.

Both of these new results are based on observations on the planetoid Eros at its close approach to the earth in 1931. Unsettled conditions in the world and the resulting wars prevented earlier completion of the calculations.

Despite the nearness of the moon, its mass is one of the most difficult astronomical measurements to make. It is done by determining the position of the center of gravity of the earth-moon pair. Then, as though they were two bodies attached to a stick balanced at this point, their relative masses are proportional inversely to their distances from the supporting point or center of gravity.

Science News Letter, August 29, 1942

AERONAUTICS

Plane Wingtip Forms Vortex That Sounds Like Bomb

➤ SMALL VORTICES or whirlpools are often formed in the air at the wing tips of an airplane which sometimes emit a sound like the whistle of a falling bomb.

A recent case was reported in England in which the sound was so realistic that both the occupants of the plane and the spectators on the ground thought something had dropped from the plane. Spectators actually ran for cover. The plane was doing 200 miles per hour at the time and making a sharp turn, so that the outer wing tip was traveling with a considerably higher velocity. This case is reported in the English journal *The Aeroplane*.

Another correspondent wrote in that a screaming noise is sometimes heard when a howitzer is fired with a low charge. The sound seems to go away in a different direction from the shell as though a part of the latter had flown off. But since no such piece had ever been found, he attributed it to a screaming vortex.

Science News Letter, August 29, 1942

ASTRONOMY

Cross Glitters Overhead

Vega is brightest star in September sky. Cygnus, the swan, forms "Northern Cross." Partial eclipse of the sun will not be visible here. Autumnal equinox arrives.

By JAMES STOKLEY

➤ BRIGHTEST of the stars which appear on September evenings is Vega, which is high in the west in the constellation of Lyra, the lyre. And locating this, one can easily find his way to several other stars of the first magnitude which are now in a prominent place, as depicted on the accompanying maps.

Directly east of Vega, and practically overhead for the times for which the maps are made (11:00 p. m., on September 1, and 10:00 p. m. on the 15th) is Cygnus, the swan. One glance at this group is enough to explain why it is often called the "northern cross." The foot of the cross is to the southwest, and the head, with brilliant Deneb, to the northeast. Though the stars in it are not as bright as those of the famed "Southern Cross," visible from more southerly parts of the world, it is a more perfect cross.

Due south of the foot of the cross is the group of Aquila, the eagle. Here there is a bright star, Altair, with a fainter companion visible above and below. And between Aquila and Cygnus are the two tiny constellations of Sagitta, the arrow, and Delphinus, the dolphin. The latter is often called "Job's coffin," for no easily apparent reason.

Charioteer Star

In addition to Vega, Altair and Deneb, three other stars classed as first magnitude are indicated. Second only to Vega in brilliance is Capella, in Auriga, the charioteer, just appearing above the northeastern horizon. Its low position, however, serves to dim somewhat its splendor.

Low in the north is the great dipper, of Ursa Major, the great bear. The dipper's handle points to the left, to Arcturus, which marks the group of Bootes. Our last star of the first magnitude is Fomalhaut, in Piscis Austrinus, the southern fish, low in the south.

No planets are shown on the maps, though Saturn is now in Taurus, the bull, and rises in the east soon after 11:00 p. m. About 1:30 a. m., brilliant Jupiter, in the constellation of Gemini, the twins, appears to the northeast. Venus, still brighter, is the next to rise, appearing about an hour and a half before the sun. Mars is not visible at all. It is directly behind the sun on October 5, and on September 18 is farthest from earth—245,300,000 miles away. After that it will start drawing near again, for another close approach next year.

Also on the astronomical calendar for September is the year's fifth and last eclipse—a partial of the sun on Thursday, September 10. It will not be seen at all in the United States, though it will be visible in northern Canada, around the North Pole, in Greenland, Iceland, Europe and North Africa. American soldiers in Rejkavik and in Ireland will have a chance to see it.

By eastern war time, the eclipse will be occurring on some part of the earth between 9:57 a. m. and 1:24 p. m. In the Arctic regions where the largest part of the sun is hidden by the moon, about 52% of the diameter of the solar disk will be covered.

No Total Eclipse

The central cone of the moon's shadow, from inside which the sun would be completely obscured, misses the earth at this time, and hence there is no path of totality, as there is for a total eclipse of the sun.

Only at total eclipses is it possible to make those observations for which astronomers have traveled half way around the world, so scientists are not bothering about this one. Even if it were total, the war might interfere, though not entirely, perhaps. About a year ago there was a total eclipse visible in Russia and China, and despite war efforts astronomers in both these countries managed to make some good observations.

Another astronomical event of the month, though one that produces no immediately visible effects, is due on September 23, at 12:17 p. m., EWT. At that moment the sun, which has been moving southward in the sky since last June, reaches its halfway mark, and stands directly over the equator. This, for us, is the beginning of autumn, though for our troops in Australia, as in other parts of the southern hemisphere, it is the beginning of spring. This is called the autumnal equinox.

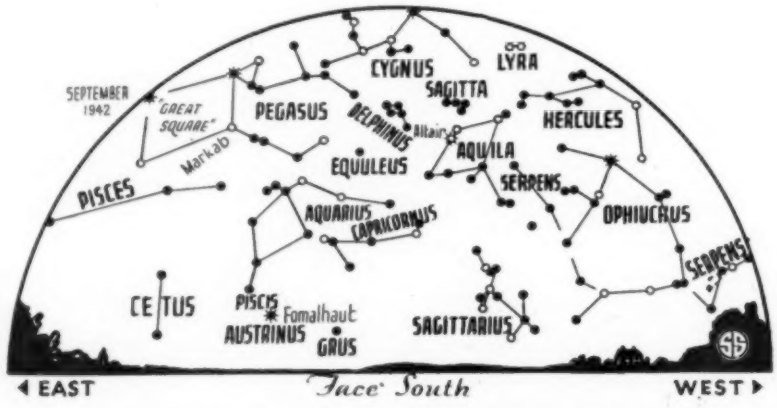
Day and Night Unequal

The name "equinox" refers to the fact that day and night at this time are supposedly equal. Actually, they are not. the effect of the bending of light by the earth's atmosphere is to raise a little the apparent position of objects low in the sky. Thus even after the sun is below the horizon, or before it has risen, this effect makes it visible. Consequently, on September 23 the sun is above the horizon for some minutes longer than it is below. Not for several weeks will day, as measured from sunrise to sunset, be as short as night, from sunset to sunrise.

Science News Letter, August 29, 1942

Celestial Time Table for September

Wednesday, Sept. 2, 11:50 p.m., moon in last quarter, and about noon moon occults bright star Aldebaran; at 3:54 p.m., moon passes Saturn. Friday, Sept. 4, 2:00 p.m., moon farthest, 251,300 miles. Saturday, Sept.



☼ ✱ ○ • SYMBOLS FOR STARS IN ORDER OF BRIGHTNESS

5, 7:42 p.m., moon passes Jupiter. Wednesday, Sept. 9, 1:24 a.m., moon passes Venus. Thursday, Sept. 10, partial eclipse of sun; 11:53 a.m., new moon. Tuesday, Sept. 15, 1:00 p.m., Mercury farthest east of sun. Thursday, Sept. 17, 12:56 p.m., moon in first quarter. Friday, Sept. 18, Mars farthest, 245,300,000 miles; 11:00 p.m., moon nearest, 229,600 miles. Wednesday, Sept. 23, 12:17 p.m., sun crosses equator, autumn commences. Thursday, Sept. 24, 10:34 a.m., full moon. Wednesday, Sept. 30, 1:01 a.m., moon passes Saturn. Eastern War Time is used throughout.

Science News Letter, August 29, 1942

MILITARY SCIENCE

Russian Weapons Good

➤ HOWEVER GREAT the difficulties of Russian armies may be, they do not result from inferiority in quality of Russian arms. The weapons used by Soviet soldiers will stand comparison with those of any first-class military power, states Garrett Underhill, well-known writer on military subjects (*Infantry Journal,* August).

Russia has even beaten the United States to the draw a time or two, in the adoption of new-type weapons. As far back as 1891, the Tsar's ordnance experts adopted a modern, .30-caliber clip-loading magazine rifle. We were still using the old single-shot Springfield .45-caliber "smoke-wagon" and did not adopt a comparable magazine rifle, the Krag-Jorgensen, until the following year. Clip-loading, which makes for rapidity of fire, came in our forces' weapon only in 1903, with the introduction of the .30-caliber Springfield.

More recently, the Soviets developed their own semi-automatic rifle, the Simonov, and by 1938 part of their troops were equipped with this weapon, "even before our Garand was being issued in quantity," Mr. Underhill notes.

The Red Army is strong for light, rapid-firing weapons that can move up with front-line troops. They have a particular fondness for "tommy" guns, their standard weapon having a considerable resemblance to our own Thompson submachine gun. They have an "opposite number" to our .50-caliber heavy machine gun in an air-cooled weapon of the same caliber.

Russian artillery has been rated as superior ever since old-time muzzle-loading days. The Germans think well enough of the 76.2-millimeter Pulitov field gun to send numbers of captured pieces to oppose the United Nations forces in North Africa.

There is also a dual-purpose gun of 76 millimeters caliber, built originally as an anti-aircraft cannon, but modified so that it can be used also against tanks, like the better advertised German 88-millimeter dual purpose gun. It has the steadying muzzle brake which has found favor in the minds of many artillerists.

For medium and heavy fire, the Red Army has 122 and 152-millimeter howitzers of modern type, including again the slotted muzzle brake. The 152-millimeter howitzer is said to outrange the comparable 150-millimeter German weapon. The 122-millimeter howitzer has double pneumatic tires on both the piece and its limber, to make movement possible over muddy Russian roads and plowed fields.

At the outbreak of their part of the war, the Germans had the drop on the Soviets in numbers and caliber of smoothbore mortars, invaluable infantry-support weapons. But the Russians soon caught up. Agreeing with their enemy on the value of heavy mortars, they adopted a 120-millimeter "mine-thrower", which is now being turned out by a "converted" industry that formerly produced mining machinery. Our own heaviest mortar has a caliber only two-thirds as great—81 millimeters.

Anti-tank weapons include a 45-millimeter gun, throwing a much heavier projectile than our light, 37-millimeter anti-tank weapon. The Red Army also has a peculiar weapon which we have never used in this country, an extremely long-barreled .57-caliber shoulder rifle carried and managed by two men. Its solid slugs must have a terrific velocity and high penetration against light tank armor.

The Red Army has a great variety of tanks, for the Soviet ordnance officers have for years been exceedingly active in trying out all promising models, both home-produced and foreign. The 54-millimeter anti-tank gun and the 76-millimeter rifle are mounted in light and medium tanks, and there is also a heavy tank of 52 tons that carries a 152-millimeter gun.

Concluding, Mr. Underhill remarks, "Looking at Russian materiel from a broadly objective point of view, it seems only just to recognize that an excellent job has been done."

Science News Letter, August 29, 1942

MEDICINE

Gloves Do Not Protect Surgeon from Mustard Gas

➤ DOCTORS who depend on the thin rubber of surgeons' gloves as protection for their hands against mustard gas may run into "unpleasant consequences," Prof. C. I. Reed of the University of Illinois College of Medicine warns.

Prof. Reed was an officer in the experimental laboratory of the Chemical Warfare Service in Washington, D. C., during 1918, and had "opportunity to see numerous demonstrations of the sad results of this particular error," he states (*Journal, American Medical Association,* Aug. 22).

In the kind of rubber used in surgeons' gloves, he explains, mustard gas is soluble, and a droplet that would produce only a small blister on bare skin may spread through an entire glove, in time, and burn the whole surface.

Rubber gloves can be used for short-time protection, if their limitations are recognized. Mustard gas is not quick-acting, Prof. Reed adds; wiping with a cloth is often ample protection, and even rubbing the skin with damp earth is efficient if nothing else is available.

Science News Letter, August 29, 1942

Vitamins to LOOK at . .

Did you ever see a vitamin? Anything so beneficial to the human race should be seen.

So "THINGS of science" has prepared a chart of Bread Vitamins in which samples of the B complex group of vitamins and the food minerals, calcium and iron phosphate are windowed behind cellophane. You can look at Thiamin, Riboflavin, Niacin, calcium and iron phosphate in this unit of THINGS of science.

But just as important to your knowledge is the careful explanation of these vitamins and their sources. What, for instance, is enriched bread? How does enriched yeast differ chemically from ordinary yeast? THINGS of science will tell you.

As in all units of THINGS of science, this unit contains specimens of scientific material to be examined, studied, and enjoyed. Museum-style legend cards are supplied for each science object; a brief, clear explanation of the entire contents is included with suggested experiments. This service is under the sponsorship of Science Service, the non-profit institution for the distribution of scientific information.

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Th-10

ENGINEERING

Better Not Alter Engine

➤ THE PROPOSAL that motorists stop out half the cylinders of their cars to save gasoline is not likely to prove popular.

First, the change-over is too expensive. Those who drive their cars only a few miles a day will not find the saving worth the expense, even though it only amounts to a few dollars for parts and a day's work for a mechanic—perhaps.

Second, for those who drive longer distances, the bumpiness of the riding will be decidedly unwelcome. And it may even damage the engine.

Third, it is not so much gasoline that we must save as rubber. There is enough gasoline, Secretary Ickes informs us, but not in the right places. The reason is lack of transportation. Nationwide gasoline rationing has been proposed, not to save gas but to save rubber.

Fourth, we have to save not only gasoline and rubber, but the automobiles as well. No new ones are to be had for non-essential purposes. And if the government finally has to requisition your car, it will want it in good condition, with quick starting, hill-climbing ability, smooth riding and all the rest.

The balance of an automobile engine is an extremely delicate matter to which years of engineering research have been devoted, first to the four, then to the six, and finally to the eight and twelve cylinder cars. It is a matter of delicate adjustments and intricate mathematics. Even a small change in engine type requires a whole new investigation. Vibration is not only disagreeable, but there is nothing that so quickly wears out a machine, engineers tell us. Where there is vibration, all parts must be made stronger and heavier.

The best way to conserve gasoline, tires and automobile, one authority suggests, is to use the car as little and as carefully as possible and abide by all the rules that have been already laid down. And above all, don't monkey with that delicately balanced mechanism, the engine.

Science News Letter, August 29, 1942

INVENTION

Primer Uses Lead Instead Of Mercury for Explosive

➤ A NEW primer for setting off explosives, whether commercial or military, that substitutes salts of lead for the now hard-to-get fulminate of mercury is the subject of patent 2,292,956, granted to J. D. McNutt and S. D. Ehrlich of New Haven, Conn. The lead salts used are lead hypophosphite and lead nitrate. To this are added trinitroresorcinate and sodium hydroxide. The ingredients react in water to form a double salt, lead styphnate and lead hypophosphite, which is stated to be a satisfactorily sensitive primer.

Rights in the invention are assigned to the Western Cartridge Company.

Science News Letter, August 29, 1942

MEDICINE

Greaseless Cream Protects Worker's Hands and Arms

➤ NEW GREASELESS CREAM applied to a worker's hands, arms and under the nails, protects them from grime and some irritating substances, reports E. I. du Pont de Nemours and Company.

The new cream is not medicinal, but forms an invisible protective film which at the end of the day can be washed off with soap and water, carrying the grime with it.

Skin disorders comprise two-thirds of all occupational diseases, according to the statistics of one major insurance company, and newcomers whose hands are not yet hardened are especially susceptible to them.

Science News Letter, August 29, 1942

MEDICINE

Sulfa Drugs Could Cause Wrong Military Decisions

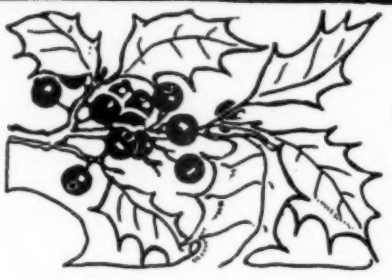
➤ DECISIONS involving possible hazard to others should not be required from military officers and civilian executives who have too recently received doses of the sulfa drugs. These are known to cause mental confusion, which may persist for some time after treatment has ceased, it is reported (*Journal, American Medical Association,* Aug. 22).

Medical authorities of the Association of American Railroads have recommended that engine and train crew members be relieved of duty for 7 to 14 days after receiving treatment of this type.

Science News Letter, August 29, 1942

PLANT PHYSIOLOGY

NATURE RAMBLINGS
by Frank Thone



Chemical Controls

➤ CHEMICAL magic with plants, written so that the ordinary garden variety of gardener can work it, is described by two U. S. Department of Agriculture plant physiologists, Dr. John W. Mitchell and Ruby R. Rice, in a new Department publication, *Plant-Growth Regulators.*

It tells how growth-promoting substances, indole acetic acid and related chemical compounds, can be used to insure the rooting of slips and cuttings, to keep trees from dropping their fruit before it is ripe, to make holly berries form from unpollinated flowers, to induce the production of seedless tomatoes, and a number of other useful things that plants are unlikely to do if left to their own devices.

Many of the experiments listed in the publication were performed in the greenhouses and experimental plots of the Bureau of Plant Industry at Beltsville, Md., others at government, state and university laboratories all over the country. Published results of these experiments are scattered through many volumes of scientific literature, and for the most part are too technical for the use of the average gardener.

The compounds used in plant growth control are rather expensive, but the concentrations in which they are applied, as sprays, dips, dusts or ointments, are so dilute that a very little goes a long way. Directions for preparation are given in terms of parts per million.

Since that does not readily visualize itself, the authors suggest that to make a one-part-per-million solution you take as much of the chemical as you can pick up on an eighth of an inch of the end of a flat toothpick, dissolve in a teaspoonful of grain alcohol, then mix that in a quart of water.

The new publication, listed as U. S. Department of Agriculture Miscellaneous Publication No. 495, can be obtained from the Superintendent of Documents for 20 cents.

Science News Letter, August 29, 1942

The Chinese have practiced *inoculation* for smallpox since the eleventh century.

Eight pounds of *butadiene rubber* per bushel of grain is the optimum expected from current extraction methods.

29 Languages by Linguaphone

In your own home you can master SPANISH, PORTUGUESE, FRENCH, RUSSIAN, JAPANESE—any of 29 languages by this amazingly simple, quick, direct conversational method. Used by a million home-study students for business, careers, professions.

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INVENTION

Rifling of Gun Barrels Improved by New System

➤ A NOVEL system of grooves and lands in rifle barrels, the invention of Roy E. Carter of Niles, Ohio, is the subject of patent no. 2,293,114. Instead of the alternation of sharp-edged grooves and lands, or ridges, Mr. Carter's rifling system calls for very wide, shallow grooves with smoothly rounded bottoms, and low, obtuse-edged lands. They are more like fixed waves in the metal than like the "gear-tooth" pattern of the conventional rifle's cross section.

As advantages for the new rifling system, the inventor claims greatly reduced fouling of the barrel, less likelihood of rupturing or stripping the bullet jacket metal, and higher velocity and greater accuracy for the smoother projectile.

Science News Letter, August 29, 1942

Thirty-six inches is the approximate mean annual *rainfall* of the world.

RESOURCES

Russia Far From Out

➤ RUSSIA is still far from being knocked out, and will be able to stay in the ring as a powerful contender even if the Nazis overrun all the Caucasus region, if claims regarding Soviet preparations, made in a new book by Maurice Edelman (*Penguin*) are correct. Titled "How Russia Prepared," the book is about the USSR in and beyond the Urals. The author is a British subject who has spent much time in Russian travel for British commercial firms.

In overrunning the Ukraine and partly paralyzing the production centers around Leningrad the German hordes have put only about a fourth of Russian industrial capacity out of action, Mr. Edelman estimates. Thirty per cent of the Soviet industrial strength lies in the Moscow region, still behind the Red defense lines—and the rest is far to the east of the war. It is concentrated mainly in two great groups of new factory cities, one in the Magnitogorsk-Sverdlovsk area in the southern Urals, the other grouped around Novosibirsk on the headwaters of the Irtish, Ob and Yenesei rivers, near the borders of Outer Mongolia.

The least optimistic part of Mr. Edelman's frankly admiring picture of Soviet preparedness concerns oil. Russian geologists and oil operators have been hard at work locating new sources to the north and east of the gravely threatened oil regions between the Black and Caspian seas, but the best that can be claimed for the extra-Caucasian oil fields is that they might yield only a sixth as much as the great petroleum areas around Maikop and Baku.

Science News Letter, August 29, 1942

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BY
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Money back if you fail to learn.

French course...identical material...also $2.

RODALE PRESS Emmaus, Pa. Dept. SN-12

RESOURCES

No Shortage of Wool

➤ IF YOU have been considering buying a couple of woolen coats to hoard this winter, don't. Civilians won't feel the pinch of any wool shortage this year, according to spokesmen for the WPB.

Consumers may have been alarmed by a report that the Army has decided to buy up the bulk of the domestic wool clip now available. Some news reports omitted the statement that "the supply of fabrics for civilian apparel has been taken care of through arrangements for purchase of imported wool and domestic wool not required by the armed services, and through WPB's program for the blending of wool with rayon, cotton and other light fibers."

In checking with WPB spokesmen, it was found that the civilian wool allowance is generous indeed; in fact, the government seems to be anxious that none of us should go cold this winter. In spite of all those uniforms and blankets for the armed services, there will be plenty of wool to go around, partly because last year set an all-time record for production of all-wool fabrics.

However, we may have to get over our rather snobbish insistence on "virgin" wool. Oddly enough—or is it odd?—men have been more particular than women on this point. Used or re-processed wool is not necessarily any better or any worse than the fancy-sounding "virgin" or "pure" wool. It all depends on the quality. A high grade of used wool is of course better than an inferior quality of new wool. Re-processed wool is sometimes used to increase durability, but usually to decrease cost.

But the word "used" applied to clothing makes us all shudder slightly, a tendency which is not diminished by the manufacturers' habit of calling used wool "shoddy." We forget that used wool is just as "clean" as virgin wool, since it has to be carefully scoured before it is garneted (reduced to its fibrous state).

A great deal of our woolen clothing has always been composed of used and re-processed fibers, although we were not all aware of it until the new labelling laws went into effect last July, enforced by the Federal Trade Commission.

Our winter garments are now either labelled "Wool" (meaning "new," "virgin," or "pure" wool) or the label must give the percentage of any other fiber used, including used or re-processed wool, cotton, rayon or other synthetic fiber. Re-processed wool is that which has been woven or felted previously into a wool product but was never used by "the ultimate consumer." Used wool comes from garments which may have been worn but which have been chemically — and antiseptically — reduced to their naked fibers.

Wool fiber, by the way, is mainly composed of a proteid substance called keratin, which is 50% carbon and the remainder an airy mixture of nitrogen, hydrogen, sulfur and oxygen. So it is not too surprising that "camel's hair" coats have been made of coal, air and water in the form known as nylon.

"Research" is now producing fibers from peanuts, corn, fish, yucca, glass, and the bark of redwood trees, according to textile experts in the U. S. Department of Agriculture.

Science News Letter, August 29, 1942

Most members of the *potato family*, which has 1,700 species, are poisonous.

● RADIO

Saturday, September 5, 1:30 p.m., EWT

"Adventures in Science," with Watson Davis, director of Science Service, over Columbia Broadcasting System.

Dr. Albert L. Elder, member of the Chemical Branch of the War Production Board, will speak as a professor of chemistry on leave from Syracuse University, discussing "Plastics: Their Use in the War and the Peace to Come."

Tuesday, September 1, 7:30 p.m., EWT

Science Clubs of America programs over WRUL, Boston, on 6.04, 9.70 and 11.73 megacycles.

One in a series of regular periods over this short wave station to serve science clubs, particularly in the high schools, throughout the Americas. Have your science group listen in at this time.

RESOURCES

Surgeons Patch Gloves, Conserve Drugs, AMA Asks

➤ SURGEONS are asked to patch their rubber gloves instead of throwing them away, to re-sterilize rubber drains, conserve adhesive plaster.

Physicians and hospitals must practice severe economy in using chemicals, drugs, metals, and other needed war supplies, the Committee on Drugs and Medical Supplies of the American Medical Association warns.

This program, endorsed by the Health Supplies Branch of the War Production Board, states further that "unnecessarily large dressings should be avoided. Catgut must be conserved. Alcohol and other chemicals should be used as sparingly as possible."

"It is expected that hospital supplies will be available in sufficient amount to meet the needs of civilian patients," the medical committee states, "but only if those needs are reduced to a minimum. Enormous quantities must be supplied to the military hospitals and to our allies. Waste, however slight, must be scrupulously avoided."

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ZOOLOGY

Bats Caught in Road Oil; Recalls Ice Age Tragedy

➤ BATS CAUGHT on a freshly oiled road like flies on sticky flypaper, repeating in miniature the giant tragedies of the Ice Age when sabertooth tigers were trapped in the La Brea tar pits in Los Angeles, were reported to the Tennessee Academy of Science by E. J. Koestner of Piper City, Ill. The glistening surface of the oil looked like water, and thirst may have been the animals' undoing. After several washings in gasoline, to get the oil out of the fur, the bats made perfectly satisfactory museum specimens.

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MEDICINE

Chemical Group Important To Life; Present in Food

➤ RECENT EXPERIMENTS reveal the important part in our daily living occupied by a particular arrangement of chemical atoms known as the "labile methyl" group. This group must be provided in our diet, reports the *Journal of the American Medical Association* (Aug. 1). Fortunately it is found in a number of foods. Fatty degeneration of the liver is counteracted to some degree by certain organic chemicals, all of which contain this "labile methyl" group.

Absence of such chemicals in experiments on rats, produced a disease condition characterized by kidney degeneration with hemorrhage.

Sources of the "labile methyl" group also counteract harmful effects of excessive doses of certain drugs. This is apparently accomplished by this useful group attaching itself to the toxic drug and thus changing its composition.

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ZOOLOGY

English Game Birds Now Do Damage to Crops

➤ FEW BRITISH sportsmen are able to indulge in grouse, partridge or pheasant shooting and as a result, these game birds, and especially the pheasants, are becoming a decided nuisance to farmers in some parts of Britain. The birds do much damage to root and other crops. Although the birds would make welcome addition to Britain's larder, landowners seldom allow tenant farmers to shoot them.

Science News Letter, August 29, 1942

INVENTION

Cotton Picking Machines Work Like Vacuum Cleaner

➤ A COTTON-PICKING machine utilizing the principle of the household vacuum cleaner is the invention of Theo Flewellen of Hernando, Miss., on which he has received patent 2,292,994. An inverted U-shaped pipe passes over the cotton row, bearing on each of its arms a series of flare-mouthed apertures. Suitable machinery mounted on the chassis provides the partial vacuum necessary to suck the ripe lint into these open mouths.

Science News Letter, August 29, 1942

RESOURCES

Nettles Used to Make Paper by Scottish Firm

➤ A METHOD of making paper from nettles has been devised by a Scottish firm of papermakers. The company is prepared to buy 1,000 tons of ordinary nettles this summer at a minimum price of $48.60 per ton, it is reported from London.

The Germans have already been using these weeds for some time to supplement their supply of fibers for cloth.

Another firm is anxious to buy 200 tons for experimental purposes and if these tests are successful, a considerable quantity of nettles will be needed as other paper manufacturers are expected to adopt the process.

Many acres of nettles have already been planted in various parts of England. Ground can be used which is not suitable for food production and there is little danger of the weeds spreading over the countryside as they are harvested before the seeding stage is reached.

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EVENING COURIER
Home
U. S. Navy Commissions New Battle Cruiser
THE NEW NAVY "E"-with-star—awarded first to Bausch & Lomb—is official recognition of continued accomplishment in Production for Victory. It symbolizes a singleness of purpose that justifies any sacrifice you or we may be called upon to make.

Dr. Braddock's Microscope Was Commissioned Today

DR. BRADDOCK wants a new microscope—a Bausch & Lomb Microscope . . . and he's going to get it. It won't be today, though, for today America commissioned a new cruiser.

On this ship there are many optical instruments with a myriad of optical parts, made by the same hands that, in other times, might be grinding the lenses for Dr. Braddock's microscope. There are range finders fore and aft, and a score of smaller ones in strategic places about the ship. The glasses with which the officers scan the horizon are Bausch & Lomb products. Yes, and there's a B&L Microscope, a duplicate of the one Dr. Braddock wants, in the laboratory of the ship's hospital.

Dr. Braddock still wants his microscope, but because he knows these things he is willing to wait. Thousands of "Dr. Braddocks" are making earlier victory possible.

Throughout the Bausch & Lomb plant, optical engineers and optical craftsmen are working long and tirelessly to further America's war effort. The lessons they are learning in the white heat of the drive for Victory will be available later to further the peacetime interests of science and industry.

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AN AMERICAN SCIENTIFIC INSTITUTION PRODUCING OPTICAL GLASS AND INSTRUMENTS FOR MILITARY USE, EDUCATION, RESEARCH, INDUSTRY AND EYESIGHT CORRECTION

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❁ *JUMBO SLIDE FASTENERS are provided for the tough canvas covers for bombers, tanks, cannon, machine guns and other heavy artillery equipment, saving much time in stripping such war implements of their coverings and getting them into action.*

Science News Letter, August 29, 1942

❁ *A "BOMB SHOVEL" which carries a charge of sand in its hollow handle ready for instant action in extinguishing incendiary bombs—and also ordinary oil and magnesium fires—is a novel implement provided by a western shipyard.*

Science News Letter, August 29, 1942

❁ *AN EMERGENCY FLASH LAMP of novel and convenient design is used by English night watchmen. The lamp turns on a horizontal axle, like a gun in its mount, so that when set on a table the beam may be thrown in any desired direction. A large ring at the top permits the lamp to be hung from the arm like a brakeman's lantern. But in this case the light can be directed vertically downward to guide the watchman's footsteps.*

Science News Letter, August 29, 1942

❁ *THE PLASTIC STRIP seen on the left side of the picture prevents light from leaking around the edge of a blackout shade. The molding is easily attached to any window frame by means of screws.*

Science News Letter, August 29, 1942

❁ *RUBBERLESS ERASERS are made of resin, oil and a South American gum, and are said to remove mistakes about as well as the old rubber.*

Science News Letter, August 29, 1942

❁ *MAGNETIC CLAMPS, flat cylindrical electromagnets, are employed to hold steel sheets together while they are being welded. The magnets not only hold the sheets, but draw them together with a 2,000-pound pull.*

Science News Letter, August 29, 1942

❁ *HARDENED TYPEWRITER cylinders can be made as good as new, or even better, by sand-blasting. To replace the platen would require about a pound of rubber. About 1,000,000 pounds of rubber a year could be saved in this way, it is estimated. The process takes off less than a thousandth of an inch from the surface—merely removing the slipperiness.*

Science News Letter, August 29, 1942

If you want the sources of the new things described here, send a three-cent stamp to SCIENCE NEWS LETTER, *1719 N. St., N. W., Washington, D. C., and ask for Gadget Bulletin 119.*

Books Just Off the Press

BASIC HORTICULTURE—Victor R. Gardner —*Macmillan,* 441 p., illus., $3.75.

CLASSIFICATION OF WHEAT VARIETIES GROWN IN THE U. S. IN 1939—J. Allen Clark and B. B. Bayles—*Govt. Print. Off.,* 146 p., illus., 35c.

CULTURE ELEMENT DISTRIBUTIONS: XX, NORTHEAST CALIFORNIA — Erminie W. Voegelin—*Univ. of Calif. Press,* 251 p., $2.25.

DIRECTORY OF ORGANIZATIONS IN AMERICA CONCERNED WITH CHINA—Wilma Fairbank—*American Council of Learned Societies,* 116 p., 50c.

HOW THE JAP ARMY FIGHTS — Paul W. Thompson, Harold Doud, John Scofield and the Editorial Staff of the Infantry Journal—*Penguin,* 158 p., illus., 25c.

LEVELS OF INTEGRATION IN BIOLOGICAL AND SOCIAL SYSTEMS — Robert Redfield, ed.—*Jaques Cattell Press,* 240 p., $2.50.

MODERN ELECTROPLATING—*Electrochemical Society,* 399 p., $5.50.

NUTRITION AND THE WAR — Geoffrey Bourne—(2d ed. rev. & enl.)—Cambridge (*Macmillan*), 148 p., $1.50.

ORGANIC CHEMISTRY — Reynold C. Fuson and H. R. Snyder—*Wiley,* 506 p., illus., $3.50.

ORGANIC REACTIONS — Roger Adams — *Wiley,* 391 p., $4.

PETROLEUM DEVELOPMENT AND TECHNOLOGY, 1942—Petroleum Division—*American Institute of Mining and Metallurgical Engineers,* 565 p., $5. (Transactions, vol. 146).

PHYSIOLOGICAL HYGIENE (Rev. ed.) — Cleveland Pendleton Hickman—*Prentice-Hall,* 482 p., $3.25.

PROCEDURE HANDBOOK OF ARC WELDING DESIGN AND PRACTICE — (7th ed.) — *Lincoln Electric Co.,* 1267 p., illus., $1.50.

SCIENCE EXPERIENCES FOR ELEMENTARY SCHOOLS, Charles K. Arey — *Teachers College, Columbia Univ.,* 98 p., 95c.

SOUTH OF THE RIO GRANDE: AN EXPERIMENT IN INTERNATIONAL UNDERSTANDING—Agnes De Lima, Tompsie Baxter, and Thomas J. Francis—*Teachers College, Columbia Univ.,* 74 p., illus., 75c.

SPHERICAL TRIGONOMETRY WITH NAVAL AND MILITARY APPLICATIONS—Lyman M. Kells, Willis F. Kern and James R. Bland—*McGraw-Hill,* 163 p., $1.50.

SUCCULENT PLANTS OF NEW AND OLD WORLD DESERTS—E. J. Alexander—*New York Botanical Garden,* 64 p., illus., 50c.

TEXTBOOK OF ANATOMY AND PHYSIOLOGY —(11 th ed.) — Diana Clifford Kimber, Carolyn E. Gray and Caroline E. Stackpole—*Macmillan,* 769 p., illus., $3.

SCIENCE NEWS LETTER will gladly obtain for you any American book or magazine in print. Send check or money order covering regular retail price ($5 if price is unknown, change to be returned) and we will pay postage in the United States. When publications are free, send 10c for handling. Address: *Book Department,* SCIENCE NEWS LETTER, 1719 N St., N. W., Washington, D. C.

· Glances at New Books ·

➤ THIS UNIQUE BOOKLET is a popular essay called A COMET STRIKES THE EARTH; How to Recognize Meteorites, Visitors from Space—H. H. Nininger—*Desert Magazine Press.* Brief but informative, it includes a small bit of actual meteorite set into a recess punched through a corner of the pages.

Science News Letter, August 29, 1942

➤ PHYSICAL CAUSES of the weather and their general features are discussed in FUNDAMENTALS OF PHYSICAL CLIMATOLOGY by V. Conrad (*Blue Hill Meteorological Observatory*). It is comprehensible to the layman but also suitable to the specialist.

Science News Letter, August 29, 1942

➤ THE DEMAND for professional radio operators is ever increasing. The RADIO CODE MANUAL by Arthur R. Nilson (*McGraw Hill*) starts from scratch and teaches the code in twenty lessons. It then tells how to increase your speed by constant practice.

Science News Letter, August 29, 1942